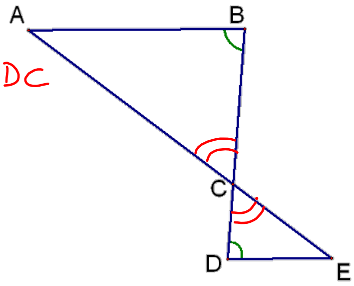
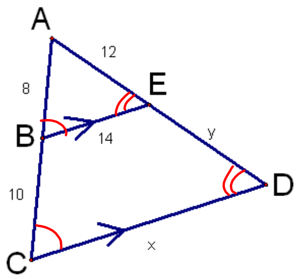
6-4 and 6-5 Prove Triangles Similar by AA~, SSS~, and SAS~

Postulate 22--Angle-Angle (AA~) Similarity Postulate--If 2 angles of 1 triangle are congruent to 2 angles of another triangle, then the 2 triangles are similar.

$\triangle ABC \sim \triangle EDC$

AA~





$\triangle ABE \sim \triangle ACD$

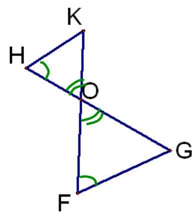
AA~

$$\frac{AB}{AC} = \frac{AE}{AD} = \frac{BE}{CD}$$

$$\frac{8}{18} = \frac{12}{12+y} = \frac{14}{x}$$

$x = 31.5$

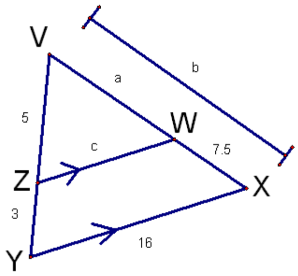
$y = 15$



Given: $\angle H \cong \angle F$

Prove: $HK \cdot GO = FG \cdot KO$

S.	R.
① ~~~	① Given
② $\angle HOK \cong \angle FOG$	② Vert. $\angle$s $\cong$
③ $\triangle HOK \sim \triangle FOG$	③ AA~
④ $\frac{HK}{FG} = \frac{KO}{GO}$	④ Corr sides of ~$\triangle$s are proportional
⑤ $HK \cdot GO = FG \cdot KO$	⑤ Cross Multiply



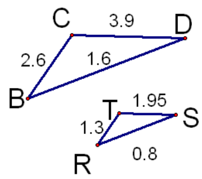
Theorem 6.2---SSS~ Theorem--If the corresponding side lengths of 2 triangles are proportional, then the triangles are similar.

sm med lg

$$\frac{1.6}{.8} = \frac{2.6}{1.3} = \frac{3.9}{1.95}$$

$\triangle BCD \sim \triangle RTS$

SSS~

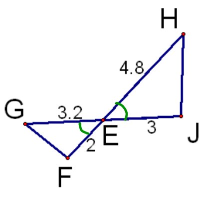


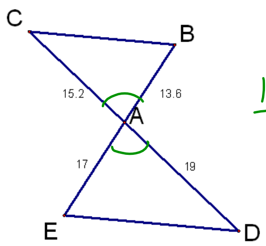
Theorem 6.3--SAS~ Theorem--If an angle of 1 triangle is congruent to an angle of a second triangle, and the lengths of the sides including these angles are proportional, then the triangles are similar.

sm lg

$$\frac{2}{3} = \frac{3.2}{4.8}$$

$\triangle GEF \sim \triangle HEJ$





Are the triangles similar?

$$\frac{13.6}{17} \stackrel{?}{=} \frac{15.2}{19}$$ ✓

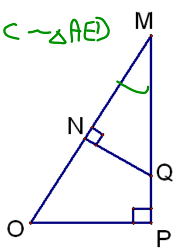
SAS~

$\triangle ABC \sim \triangle AED$

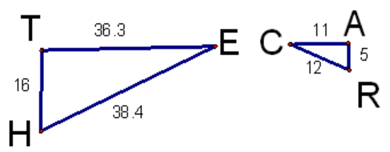
Are the triangles similar?

$\triangle MNQ \sim \triangle MPO$

AA~



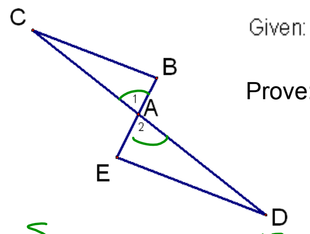
Are the triangles similar?



sm ? med ? lg

$$\frac{16}{5} \overset{?}{=} \frac{36.3}{11} \overset{?}{=} \frac{38.4}{12}$$

Not ~

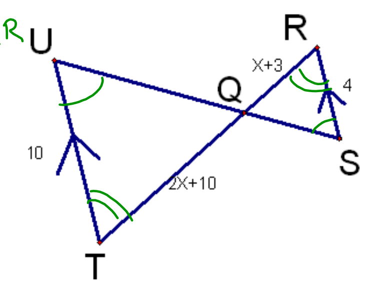


Given: $\frac{AC}{AD} = \frac{BA}{EA}$

Prove: $\angle C \cong \angle D$

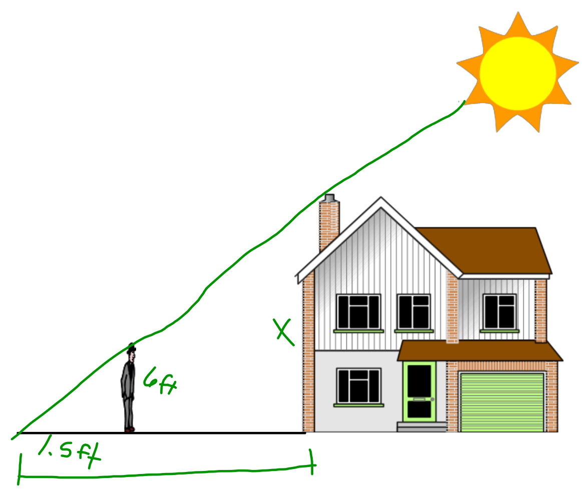
S.	R.
① ~~~~	① Given
② $\angle 1 \cong \angle 2$	② Vert ∠s ≅
③ $\triangle ABC \sim \triangle AED$	③ SAS ~
④ $\angle C \cong \angle D$	④ Corr ∠s of ~△s are ≅

$\triangle UQT \sim \triangle SQR$



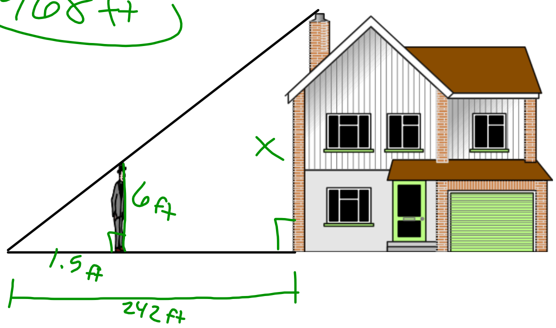
$$\frac{2x+10}{x+3} = \frac{10}{4}$$

$x = 5$

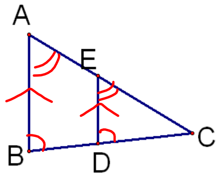


$$\frac{1.5}{6} = \frac{242}{x}$$

968 ft



Given: $\overline{DE}$ is the midsegment of ΔABC
Prove: $\Delta CDE \sim \Delta CBA$



HW
p384-385 #s 3-17, 21, 22, 25
p392-394 #s 5-8, 33